

**REMARKS**

Claims 1-15 and 17-18 are currently pending. Claim 1 has been amended to incorporate subject matter from claim 16, which has been canceled, and claim 11 has been amended in conformity with claim 1. New claim 18 has been added. Reconsideration and withdrawal of the rejections of the claims are respectfully requested.

At the outset, it has been observed that there is a typographical error in the supplementary PTO-892 form provided by the Examiner via facsimile on August 25, 2003. In particular, the *Carpenter* patent is listed thereon as "US-5,18,828" whereas it should be listed as "US-5,418,828." Applicants request the Office's assistance in remedying this oversight so that the *Carpenter* patent is correctly printed on the face of any patent issuing from the present application.

Claims 1-6 and 10 were rejected under 35 U.S.C. §102(b), on the grounds that they were considered to be anticipated by the *Bowen et al.* patent (U.S. Patent No. 5,588,034). In addition, claims 7, 8, 9 and 17 were rejected under 35 U.S.C. §103(a), as allegedly being unpatentable over the *Bowen et al.* patent. Claims 11-16 were rejected as allegedly being unpatentable over the *Bowen et al.* patent in view of the *Carpenter* patent. Applicants respectfully submit that the *Bowen et al.* patent does not anticipate the subject matter of the pending claims, nor otherwise suggest that subject matter, whether considered by itself or in combination with the *Carpenter* patent.

Claim 1 recites an X-ray topographic system, comprising an X-ray generator for producing a beam of X-rays directed towards a sample location, and a detector positioned

to receive X-rays deflected by a sample at the sample location, the detector comprising an electronic X-ray detector having an array of pixels corresponding to the beam area at the detector. The system also comprises an image processing means for reading out the pixel data of the detector, wherein the beam of X-rays has sufficient divergence to produce doubling of the image at the detector, and wherein the image processing means is operative to remove the effects of the image doubling.

An advantage of using an image processing means such as recited in claim 1, is that the intensity of X-ray radiation used can be maximized while maintaining high quality imaging. In particular, X-ray intensity can be maximized because both  $K\alpha_1$  and  $K\alpha_2$  radiation can be utilized. As discussed at page 13, lines 6-9 and at page 21, line 18 through page 22, line 28 of the present application, in an exemplary approach, image processing can be used to correct for image doubling, which can occur when using both  $K\alpha_1$  and  $K\alpha_2$  radiation as a result of the divergence between the  $K\alpha_1$  and  $K\alpha_2$  diffractions. Thus, by using an image processing means such as recited in claim 1, X-ray intensity can be maximized while maintaining high quality imaging.

In contrast, the *Bowen et al.* patent does not disclose an X-ray topographic system as recited in claim 1. Rather, the *Bowen et al.* patent discloses in Figure 3 therein an X-ray inspection system that uses a plurality of X-ray beams 15 in conjunction with the Laue method to inspect a sample (see, e.g., column 4, lines 1-34). The beams 15 are diffracted from a sample 16, thereby producing a plurality of X-ray beams 19, which are detected with a detector 120. The system uses the Laue method to predict how the pattern of beams

should appear on the detector. If the measured pattern differs from that predicted by the Laue method, then a defect has been detected. As such, *the Bowen et al.* patent does not disclose an *X-ray topographic* system that generates an *image of the sample* as recited in claim 1. Rather, the system illustrated in Figure 3 of the *Bowen et al.* patent examines a pattern of spots associated with diffracted beams.

Since the *Bowen et al.* patent does not disclose an X-ray topography system that images a sample, it does not disclose the further feature of an image processing means that is operative to remove effects of image doubling as recited in claim 1. Rather, the processor 122 illustrated in Figure 3 of the *Bowen et al.* patent is disclosed as analyzing an image of a spot pattern using image processing to indicate whether a crystal has a correct orientation or a different orientation (column 4, lines 14-17).

Moreover, there would be no need for the processor 122 disclosed in the *Bowen et al.* patent to be operative to remove effects of image doubling as recited in claim 1, because image doubling would not be expected to occur in the system disclosed in the *Bowen et al.* patent. In particular, the system disclosed in the *Bowen et al.* patent is disclosed as using polychromatic, white radiation (column 2, lines 52-55) in connection with the Laue method, as opposed to using both  $K\alpha_1$  and  $K\alpha_2$  radiation, for example. Thus, no image doubling would be expected, and an image processing means to remove image doubling would be unnecessary in the system disclosed in the *Bowen et al.* patent.

For at least these reasons, Applicants respectfully submit that claim 1 is not anticipated by the *Bowen et al.* patent. Accordingly, withdrawal of the rejection and

allowance of claim 1 is respectfully requested. Claims 2-6 and 10 are allowable at least by virtue of dependency, and allowance of the same is respectfully requested.

With regard to claims 7-9 and 11-16, Applicants submit that the Office's arguments set forth in the 35 U.S.C. §103(a) rejections of these claims do not negate the distinctions between the subject matter recited in claim 1 and that disclosed in the *Bowen et al.* patent as discussed above. Accordingly, claims 7-9 and 11-16 are allowable at least by virtue of dependency, and allowance of the same is respectfully requested. New claim 18 is also allowable at least by virtue of dependency.

In view of the foregoing, it is respectfully submitted that all pending claims are allowable over the references of record. Reconsideration and withdrawal of the rejections are therefore respectfully requested.

Respectfully submitted,

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